User Guide

Tracer CH530™
Chiller Control System
CGWN/CCUN 205-211
CGAN 209-214



CG-SVU02B-E4

General information

Foreword

These instructions are given as a guide to good practice in the installation, start-up, operation, and maintenance by the user, of Trane CH530 chiller control system on CGWN/CCUN and CGAN 209-214 chillers. They do not contain full service procedures necessary for the continued successful operation of this equipment. The services of a qualified technician should be employed through the medium of a maintenance contract with a reputable service company. Read this manual thoroughly before unit start-up.

Warnings and cautions

Warnings and Cautions appear at appropriate sections throughout this manual. Your personal safety and the proper operation of this machine require that you follow them carefully. The constructor assumes no liability for installations or servicing performed by unqualified personnel.

WARNING! : Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION! : Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or for equipment or property-damage-only accidents.

Safety recommendations

To avoid death, injury, equipment or property damage, the following recommendations should be observed during maintenance and service visits:

1. Disconnect the main power supply before any servicing on the unit.
2. Service work should be carried out only by qualified and experienced personnel.

Reception

On arrival, inspect the unit before signing the delivery note.

Reception in France only:

In case of visible damage: The consignee (or the site representative) must specify any damage on the delivery note, legibly sign and date the delivery note, and the truck driver must countersign it. The consignee (or the site representative) must notify Trane Epinal Operations - Claims team and send a copy of the delivery note. The customer (or the site representative) should send a registered letter to the last carrier within 3 days of delivery.

Reception in all countries except France:

In case of concealed damage: The consignee (or the site representative) must send a registered letter to the last carrier within 7 days of delivery, claiming for the described damage. A copy of this letter must be sent to Trane Epinal Operations - Claims team.

Note: for deliveries in France, even concealed damage must be looked for at delivery and immediately treated as visible damage.

General information

Warranty

Warranty is based on the general terms and conditions of the manufacturer. The warranty is void if the equipment is repaired or modified without the written approval of the manufacturer, if the operating limits are exceeded or if the control system or the electrical wiring is modified. Damage due to misuse, lack of maintenance or failure to comply with the manufacturer's instructions or recommendations is not covered by the warranty obligation. If the user does not conform to the rules of this manual, it may entail cancellation of warranty and liabilities by the manufacturer.

Maintenance contract

It is strongly recommended that you sign a maintenance contract with your local Service Agency. This contract provides regular maintenance of your installation by a specialist in our equipment. Regular maintenance ensures that any malfunction is detected and corrected in good time and minimizes the possibility that serious damage will occur. Finally, regular maintenance ensures the maximum operating life of your equipment. We would remind you that failure to respect these installation and maintenance instructions may result in immediate cancellation of the warranty.

Training

To assist you in obtaining the best use of it and maintaining it in perfect operating condition over a long period of time, the manufacturer has at your disposal a refrigeration and air conditioning service school. The principal aim of this is to give operators and technicians a better knowledge of the equipment they are using, or that is under their charge. Emphasis is particularly given to the importance of periodic checks on the unit operating parameters as well as on preventive maintenance, which reduces the cost of owning the unit by avoiding serious and costly breakdown.

Contents

Overview

The Trane CH530 control system that runs the chiller consists of several elements:

- The main processor collects data, status, and diagnostic information and communicates commands to the ***LLID (for Low Level Intelligent Device)*** bus. The main processor has an integral display (DynaView).
- ***LLID bus***. The main processor communicates to each input and output device (e.g. temperature and pressure sensors, low voltage binary inputs, analog input/output) all connected to a four-wire bus, rather than the conventional control architecture of signal wires for each device.
- The ***communication interface*** to a building automation system (BAS).
- A ***service tool*** to provide all service/maintenance capabilities. Main processor and service tool (TechView) software is downloadable from ***www.Trane.com***. The process is discussed later in this section under TechView Interface. DynaView provides bus management. It has the task of restarting the link, or filling in for what it sees as "missing" devices when normal communications has been degraded. Use of TechView may be required.

The CH530 uses the IPC3 protocol based on RS485 signal technology and communicating at 19.2 Kbaud to allow 3 rounds of data per second on a 64-device network. Most diagnostics are handled by the DynaView. If a temperature or pressure is reported out of range by a LLID, the DynaView processes this information and calls out the diagnostic. The individual LLIDs are not responsible for any diagnostic functions.

Note: *It is imperative that the CH530 Service Tool (TechView) be used to facilitate the replacement of any LLID or reconfigure any chiller component*.

Controls Interface

DynaView (picture on cover)

Each chiller is equipped with the DynaView interface. DynaView has the capability to display additional information to the advanced operator including the ability to adjust settings. Multiple screens are available and text is presented in multiple languages as factory-ordered or can be easily downloaded online.

TechView

TechView can be connected to the DynaView module and provides further data, adjustment capabilities, diagnostics information, downloadable software, and downloadable languages.

DynaView Interface

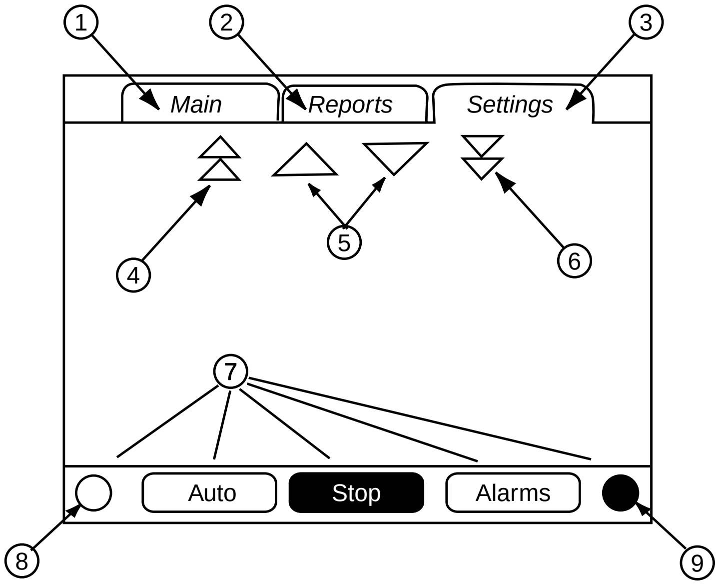
The display on DynaView is a 1/4 VGA display with a resistive touch screen and an LED backlight. The display area is approximately 4 inches wide by 3 inches high (102mm x 60mm).

CAUTION!

Equipment Damage! Putting excessive pressure on the touch screen could cause damage. It takes less than 7 kg of force to break the screen.

In this touch screen application, key functions are determined completely by software and change depending upon the subject matter currently being displayed. The basic touch screen functions are outlined below.

Figure 1 - Basic Screen Format



Radio Buttons

Radio buttons show 1 menu choice among 2 or more alternatives, all visible. The possible selections are each associated with a button. The selected button is darkened, presented in reverse video to indicate it is the selected choice. The full range of possible choices as well as the current choice is always in view.

Spin Value Buttons

Spin values are used to allow a variable setpoint to be changed, such as leaving water setpoint. The value increases or decreases by touching the (+) or (-) arrows.

Action Buttons

Action buttons appear temporarily and provide the user with a choice such as **Enter** or **Cancel**.

File Folder Tabs

File folder tabs are used to select a screen of data. The tabs are in 1 row across the top of the display. The user selects a screen of information by touching the appropriate tab.

Display Screens

The main body of the screen is used for description text, data, setpoints, or keys (touch sensitive areas). The Chiller Mode is displayed here.
A double arrow pointing to the right indicates more information is available about the specific item on that same line. Pressing it will bring you to a sub-screen that will present the information or allow changes to settings.

DynaView Interface

The bottom of the screen (7) is present in all screens and contains the following functions. The contrast (8,9) may require re-adjustment at ambient temperatures significantly different from those present at last adjustment. The other functions are critical to machine operation. The AUTO and STOP keys are used to enable or disable the chiller. The key selected is in black (reverse video). The chiller will stop when the STOP key is touched and after completing the Run Unload mode.

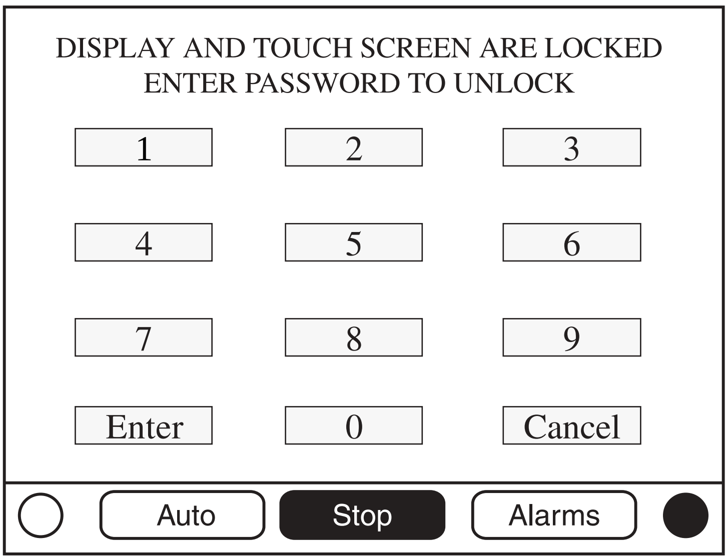
Touching the AUTO key will enable the chiller if no diagnostic is present. (A separate action must be taken to clear active diagnostics.) The AUTO and STOP keys take precedence over the Enter and Cancel keys. (While a setting is being changed, AUTO and STOP keys are recognized even if Enter or Cancel has not been pressed.) The ALARMS button appears only when an alarm is present, and blinks (by alternating between normal and reverse video) to draw attention to a diagnostic condition. Pressing the ALARMS button takes you to the corresponding tab for additional information.

Keypad/Display Lockout Feature

Note: *The DynaView display and Touch Screen Lock screen is shown above. This screen is used if the Display and touch screen and lock feature is enabled. Thirty minutes after the last keystroke, this screen is displayed and the Display and Touch Screen is locked out until the sequence "159 <ENTER>" is pressed.* Until the proper password is entered, there will be no access to the DynaView screens including all reports, setpoints, and Auto/Stop/Alarms/Interlocks. The password "159" can not be changed from either DynaView or TechView.

For setting changes, use the password "314 <ENTER>".

Figure 2 - Keypad

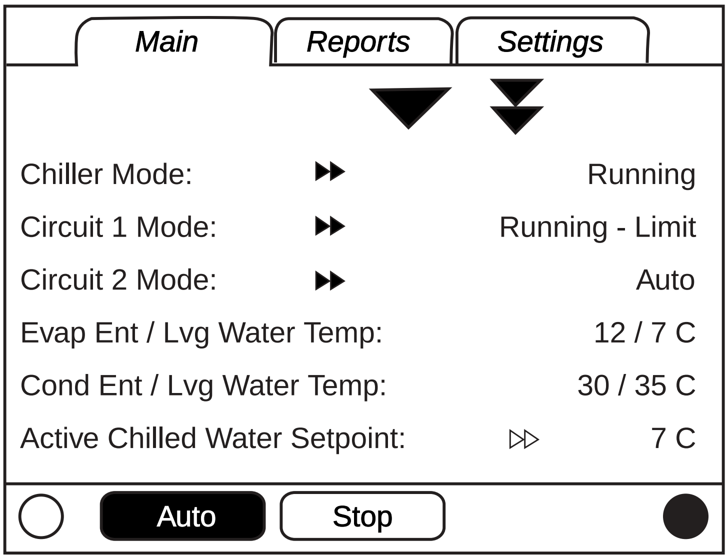


DynaView Interface

Main Screens

The Main screen shall be the default screen. After an idle time of 30 minutes the CH530 shall display the Main screen with the first data fields. The remaining items (listed in the following table) will be viewed by selecting the up/down arrow icons.

Figure 3 - Main screen



DynaView Interface

Figure 4 - Main screen menu, Chiller Operating Modes - Sub Level

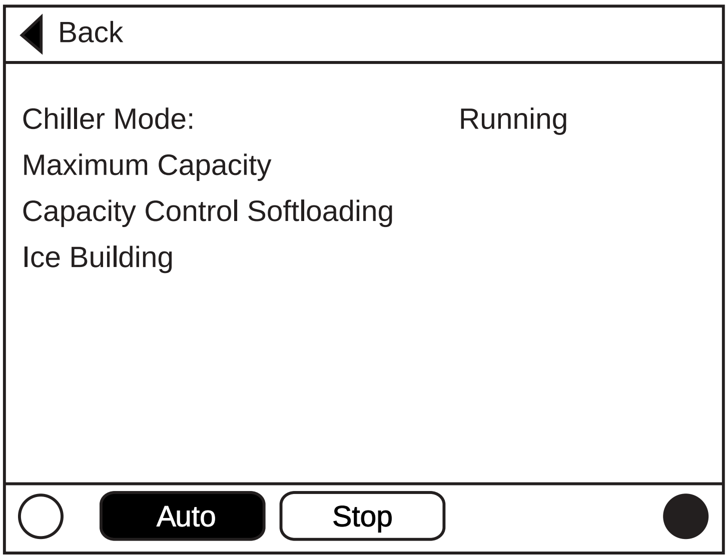
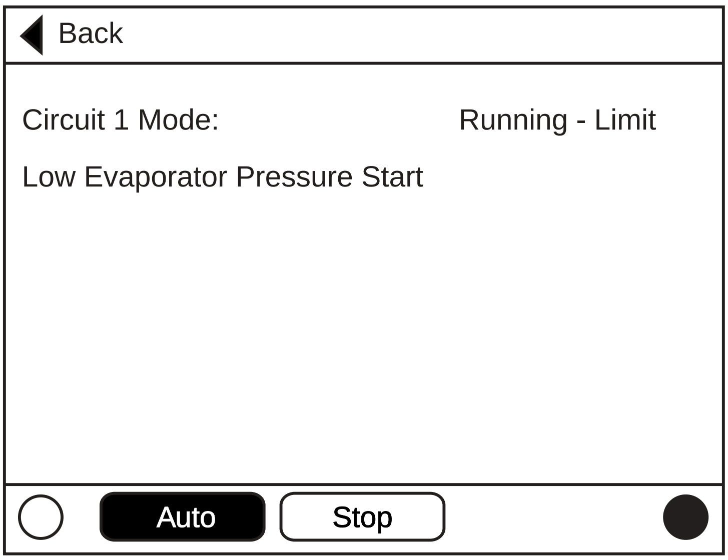


Figure 5 - Main screen menu, Chiller Operating Modes - Sub Level



DynaView Interface

Table 1 - Main screen menu, Chiller Operating Modes - Top Level

Chiller Level Mode	
Top Level Mode	**Description**
MP Resetting	The main processor is going through reset.
MP Resetting Sub Modes	**Description**
	No Chiller Sub-Modes

Chiller Level Mode	
Top Level Mode	**Description**
Stopped	The chiller is not running either circuit, and cannot run without intervention.
Stopped Sub Modes	**Description**
Local Stop	Chiller is stopped by the DynaView Stop button command- cannot be remotely overridden.
Immediate Stop	Chiller is stopped by the DynaView Immediate Stop (by pressing the Stop then Immediate Stop buttons in succession) - previous shutdown was manually commanded to shutdown immediately.
No Circuits Available	The entire chiller is stopped by circuit diagnostics or lockouts that may automatically clear.
Diagnostic Shutdown - Manual Reset	The chiller is stopped by a diagnostic that requires manual intervention to reset.

DynaView Interface

Chiller Level Mode	
Top Level Mode	**Description**
Run Inhibit	The chiller is currently being inhibited from starting (and running), but may be allowed to start if the inhibiting or diagnostic condition is cleared.
Run Inhibit Sub Modes	**Description**
Ice Building Is Complete	The chiller is inhibited from running as the Ice Building process has been normally terminated on the evaporator entering temperature. The chiller will not start unless the ice building command (hardwired input or Building Automation System command) is removed or cycled.
Start Inhibited by BAS	Chiller is stopped by Tracer or other BAS system.
Start Inhibited by External Source	The chiller is inhibited from starting or running by the "external stop" hardwired input.
Diagnostic Shutdown - Auto Reset	The entire chiller is stopped by a diagnostic that may automatically clear.
Waiting for BAS Communications	The chiller is inhibited because of lack of communication with the BAS. This is only valid 15 minutes after power up.
Start Inhibited by Low Ambient Temp	The chiller is inhibited based on the outdoor air temperature.

Chiller Level Mode	
Top Level Mode	**Description**
Auto	The chiller is not currently running but can be expected to start at any moment given that the proper conditions and interlocks are satisfied.
Auto Sub Modes	**Description**
Waiting For Evaporator Water Flow	The chiller will wait a user adjustable time in this mode for evaporator water flow to be established per the flow switch hardwired input.
Waiting For A Need To Cool	The chiller will wait indefinitely in this mode, for an evaporator leaving water temperature higher than the Chilled Water Setpoint plus some control dead-band.
Waiting For A Need To Heat	For water cooled (CGWN), the chiller will wait indefinitely in this mode, for a condenser leaving water temperature lower than the Hot Water Setpoint plus some control dead-band. For a reversible (CXAN) the chiller will wait indefinitely in this mode, for an evaporator leaving water temperature lower than the Hot Water Setpoint plus some control dead-band.
Power Up Delay Inhibit: MIN:SEC	On Power up, the chiller will wait for the Power Up Delay Timer to expire.

DynaView Interface

Chiller Level Mode	
Top Level Mode	**Description**
Waiting to Start	The chiller is going through the necessary steps to allow the lead circuit to start.
Waiting to Start Sub Modes	**Description**
Waiting For Condenser Water Flow	The chiller will wait a user adjustable time in this mode for condenser water flow to be established per the flow switch hardwired input.

Chiller Level Mode	
Top Level Mode	**Description**
Running	At least one circuit on the chiller is currently running.
Running Sub Modes	**Description**
Maximum Capacity	The chiller is operating at its maximum capacity.
Capacity Control Softloading	The control is limiting the chiller loading due to capacity based softloading setpoints.
Unit is Building Ice	The chiller is Building Ice, and will terminate on the Ice Termination Setpoint based on the Entering Evap Water Temperature sensor.

Chiller Level Mode	
Top Level Mode	**Description**
Running - Limit	At least one circuit on the chiller is currently running, but the operation of the chiller as a whole is being actively limited by the controls. The sub modes that apply to the Running top modes may also be displayed along with the following limit specific modes.
Running - Limit Sub Modes	**Description**
Demand Limit	The number of compressors allowed to operate is being limited to less than the available number of compressors by either the BAS system, the front panel demand limit setpoint or the external demand limit input.

DynaView Interface

Chiller Level Mode	
Top Level Mode	**Description**
Shutting Down	The chiller is still running but shutdown is imminent. The chiller is going through a compressor run-unload.
Shutting Down Sub Modes	**Description**
Evaporator Water Pump Off Delay: MIN:SEC	The Evaporator pump is executing the pump off delay timer.
Condenser Water Pump Off Delay: MIN:SEC	The Condenser pump is executing the pump off delay timer.

Chiller Level Mode	
Top Level Mode	**Description**
Misc.	These sub modes may be displayed in most of the top level chiller modes
Misc. Sub Modes	**Description**
Cond Fans Inhibited By Low Pressure	The condenser fans are being inhibited from running because the ambient temperature was below 10°C and the suction pressure status is not good at startup for each circuit.
Hot Water Control	For water cooled (CGWN) the chiller is controlling to the leaving condenser water temperature. For a reversible (CXAN) the reversing valve is in the heating position. This sub-mode is mutually exclusive with the Chilled Water Control mode.
Chilled Water Control	For water cooled (CGWN) the chiller is controlling to the leaving evaporator water temperature. For a reversible (CXAN) the reversing valve is in the cooling position. This sub-mode is mutually exclusive with the Hot Water Control mode
Manual Evaporator Pump Override	The evaporator water pump relay is on due to a manual command.
Diagnostic Evap Pump Override	The evaporator water pump relay is on due to a diagnostic.
Diagnostic Condenser Fan Override	The condenser fan relays are on due to a diagnostic.
Manual Condenser Pump Override	The condenser water pump relay is on due to a manual command.
Manual Compressor Control Signal	Chiller capacity control is being controlled by DynaView or TechView.
Anti-Freeze Heater On	The anti-freeze heater is on.

DynaView Interface

Table 2 - Circuit Level Operating Modes:

Circuit Level Mode	
Top Level Mode	**Description**
Stopped	The circuit is not running, and cannot run without intervention.
Stopped Sub Modes	**Description**
Diagnostic Shutdown - Manual Reset	The circuit has been shutdown on a latching diagnostic.
Front Panel Circuit Lockout	The circuit is manually locked out by the circuit lockout setting - the nonvolatile lockout setting is accessible through either the DynaView or TechView.

Circuit Level Mode	
Top Level Mode	**Description**
Run Inhibit	The given circuit is currently being inhibited from starting (and running), but may be allowed to start if the inhibiting or diagnostic condition is cleared.
Run Inhibit Sub Modes	**Description**
Diagnostic Shutdown - Auto Reset	The circuit has been shutdown on a diagnostic that may clear automatically.
Condenser Pressure Limit	The circuit is being inhibited from starting due to high condenser pressure.

Circuit Level Mode	
Top Level Mode	**Description**
Auto	The circuit is not currently running but can be expected to start at any moment given that the proper conditions are satisfied.
Auto Sub Modes	**Description**
	No Circuit Sub-Modes

Circuit Level Mode	
Top Level Mode	**Description**
Waiting to Start	The chiller is going through the necessary steps to allow the lead circuit to start.
Waiting to Start Sub Modes	**Description**
	No Circuit Sub-Modes

Circuit Level Mode	
Top Level Mode	**Description**
Running	The compressor on the given circuit is currently running.
Running Sub Modes	**Description**
	No Circuit Sub-Modes

DynaView Interface

Circuit Level Mode	
Top Level Mode	**Description**
Running - Limit	The compressor on the given circuit is currently running in a limit mode.
Running - Limit Sub Modes	**Description**
Hot Start Limit	Additional stages on a given circuit are being held off based on leaving evaporator temperature.
Condenser Pressure Limit	The circuit is being inhibited from loading due to high condenser pressure.
Low Evaporator Pressure Limit	The circuit is being inhibited from loading due to low evaporator pressure.

Circuit Level Mode	
Top Level Mode	**Description**
Preparing Shutdown	The circuit is preparing to de-energize the compressor.
Preparing Shutdown Sub Modes	**Description**
Operational Pumpdown	The operational pumpdown is enabled and the circuit is shutting down.

Circuit Level Mode	
Top Level Mode	**Description**
Shutting Down	The chiller is going through the necessary steps after de-energizing the compressor.
Shutting Down Sub Modes	**Description**
	No Circuit Sub-Modes

Circuit Level Mode	
Top Level Mode	**Description**
Misc.	These sub modes may be displayed in most of the top level circuit modes
Misc. Sub Modes	**Description**
Defrosting	The circuit is in a defrost operational mode.
Service Pumpdown	The circuit is currently performing a service pumpdown.
Compressor X Running	A specific compressor is running where X is A or B.
Restart Time Inhibit Cprsr X: MIN:SEC	If there is accumulated Restart Inhibit Time, it must expire before the compressor is allowed to start. X is denoted as compressor A or B.

DynaView Interface

Reports Screen

The Reports tab will allow a user to select from a list of possible reports headings.

Each report will generate a list of status items as defined in the following tables.

Figure 6 - Reports screen

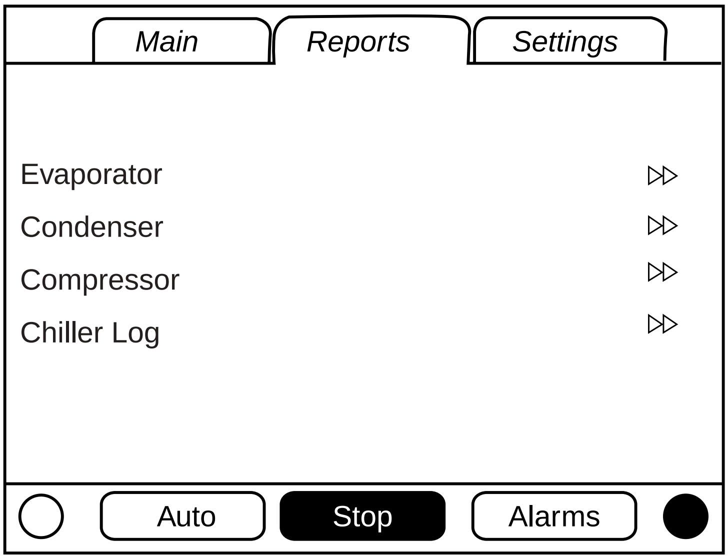


Table 3 - Reports screen

Description	Units	Resolution
Evaporator		
Evap Entering Water Temp	Temperature	+ or -XXX.X
Evap Leaving Water Temp	Temperature	+ or -XXX.X
Evap Water Flow Switch Status		(Flow, No Flow)
Circuit Evaporator		
Evap Sat Rfgt Temp	Temperature	+ or -XXX.X
Suction Pressure	Temperature	+ or -XXX.X
Evap Approach Temp	Temperature	+ or -XXX.X
Condenser		
Cond Entering Water Temp	Temperature	+ or -XXX.X
Cond Leaving Water Temp	Temperature	+ or -XXX.X
Cond Water Flow Switch Status	Enumeration	(Flow, No Flow)
Outdoor Air Temperature	Temperature	+ or -XXX.X
Circuit Condenser		
Cond Sat Rfgt Temp	Temperature	+ or -XXX.X
Discharge Pressure	Temperature	+ or -XXX.X
Cond Approach Temp	Temperature	+ or -XXX.X
Compressor		
Chiller Running Time	hr:min	XXXX:XX
Circuit Compressor		
Compressor Starts	Integer	XXXX
Compressor Running Time:	hr:min	XXXX:XX

DynaView Interface

ASHRAE Chiller Log		
Current Time/Date	Date / Time	XX:XX mmm dd, yyyy
Chiller Mode	Text	
Active Chilled Water Setpoint	Temperature	XXX.X
Evap Entering Water Temp	Temperature	XXX.X
Evap Leaving Water Temp	Temperature	XXX.X
Evap Water Flow Switch Status	Text	
Cond Entering Water Temp	Temperature	XXX.X
Cond Leaving Water Temp	Temperature	XXX.X
Cond Water Flow Switch Status	Text	
Outdoor Air Temp	Temperature	XXX.X
Circuit ASHRAE Log		
Circuit Mode	Text	
Evap Sat Rfgt Temp	Temperature	XXX.X
Suction Pressure	Pressure	X
Evap Approach Temp	Temperature	XXX.X
Cond Sat Rfgt Temp	Temperature	XXX.X
Discharge Pressure	Pressure	X
Cond Approach Temp	Temperature	XXX.X
Compressor A Starts	Integer	XXXX
Compressor A Running Time	Hours:Minute	XX:XX
Compressor B Starts	Integer	XXXX
Compressor B Running Time	Hours:Minute	XX:XX
Historic Diagnostics		

DynaView Interface

Settings Screen

The Settings screen provides a user the ability to adjust settings justified to support daily tasks. The layout provides a list of sub-menus, organized by typical subsystem. This organization allows each subscreen to be shorter in length which should improve the users navigation.

Figure 7 - Settings screen

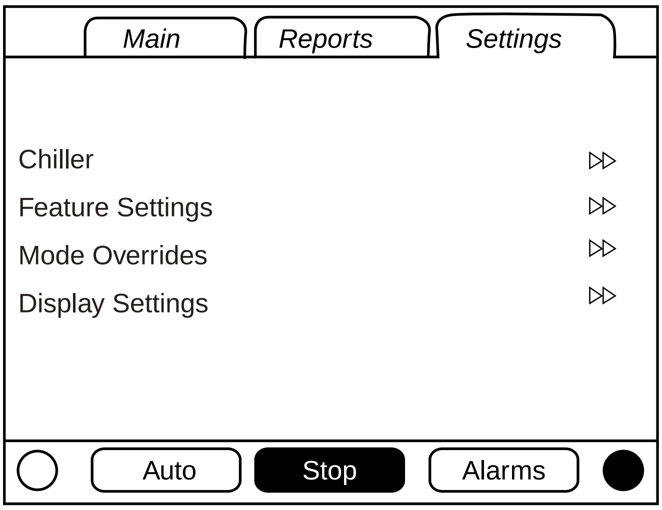


Table 4 - Settings screen

Description	Units	Resolution, Default
Chiller		
Front Panel Chilled Water Setpt	Temperature	+ or - XXX.X
Low Refrigerant Temp Cutout	Temperature	+ or - XXX.X
Front Panel Demand Limit	Percent	X
Front Panel Ice Build Cmd	Text	On/Auto
Front Panel Ice Termn Setpt	Temperature	XXX.X
Design Delta Temp	Temperature	XXX.X
Setpoint Source	Text	(BAS/Ext/FP, Ext/ Front Panel, Front Panel), BAS/Ext/FP
Leaving Water Temp Cutout	Temperature	XX.X
Circuit Staging Option	Text	Bal Starts/Hrs, Circuit 1 Lead, Circuit 2 Lead), Bal Starts/Hrs
Compressor Staging Option	Text	(Fixed, Bal Starts/Hrs), Fixed

DynaView Interface

Feature Settings		
Chilled Water Reset	Text	(Constant, Outdoor, Return, Disable), Disable
Return Reset Ratio	Percent	XXX
Return Start Reset	Temperature	XXX.X
Return Maximum Reset	Temperature	XXX.X
Outdoor Reset Ratio	Percent	XXX
Outdoor Start Reset	Temperature	XXX.X
Outdoor Maximum Reset	Temperature	XXX.X
Ext Chilled Water Setpoint	Text	(Enable, Disable), Disable
Ice Building	Text	(Enable, Disable), Disable
LCI-C Diag Encoding	Text	(Text, Code), Text
LCI-C Diag Language	Text	XX
System Manual Control Settings		
Evap Water Pump	Text	(Auto, On), Auto
Cond Water Pump	Text	(Auto, On), Auto
Clear Restart Inhibit Timer	Time	X:XX
Capacity Control	Text	Auto
Circuit Manual Control Settings		
Cprsr A Pumpdown	Text	Status: (Avail, Not Avail, Pumpdown) Override Subscreen command buttons: (Abort, Pumpdown) - button is either greyed out or not shown if not available
Cprsr B Pumpdown	Text	Status: (Avail, Not Avail, Pumpdown) Override Subscreen command buttons: (Abort, Pumpdown) - button is either greyed out or not shown if not available
Front Panel Ckt Lockout	Text	(Not Locked Out, Locked Out), Not Locked Out
Display Settings		
Date Format	Text	("mmm dd, yyy", "dd-mmm-yyyy"), "mmm dd, yyy
Date	Text	xxx
Time Format	Text	(12-hour, 24-hour), 12-hour
Time of Day	Text	00:00
Keypad/Display Lockout	Text	(Enable, Disable), Disable
Display Units	Text	(SI, English), English
Pressure Units	Text	(Absolute, Gauge), Gauge
Language	Text	(English, ...), English

DynaView Interface

Diagnostics Screen

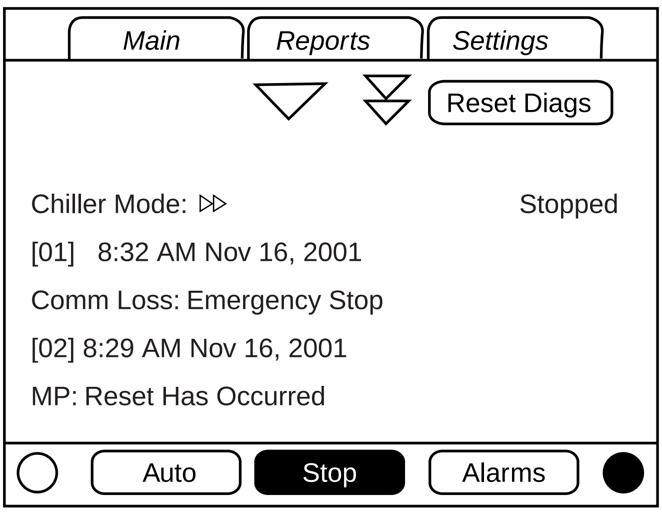
The diagnostic screen is accessible by depressing the Alarms enunciator A scrollable list of the last (up to 20) active diagnostics will be presented.

Performing a Reset All Active Diagnostics will reset all active diagnostics regardless of type, machine or refrigerant circuit. Compressor diagnostics, which hold off only one compressor, will be treated as circuit diagnostics, consistent with the circuit to which they belong.

The scrollable list will be sorted by time of occurrence. If a diagnostic of severity = warning is present, the "Alarms" key will be present but not flashing. If a diagnostic of severity = shutdown (normal or immediate) is present, the "Alarm" key will display that is flashing. If no diagnostics exist, the "Alarm" key will not be present.

The "Operating Mode At Last Diagnostic" text above the most recent diagnostic will display a sub-screen listing the operating mode and submodes at the time of the last diagnostic.

Figure 8 - Diagnostics screen



TechView Interface

TechView is the PC (laptop) based tool used for servicing Tracer CH530. Technicians that make any chiller control modification or service any diagnostic with Tracer CH530 must use a laptop running the software application "TechView." TechView is a Trane application developed to minimize chiller downtime and aid the technicians' understanding of chiller operation and service requirements.

CAUTION: *Performing any Tracer CH530 service functions should be done only by a properly trained service technician. Please contact your local Trane service agency for assistance with any service requirements.* TechView software is available via Trane.com. (http://www.trane.com/commercial/software/tracerch530/) This download site provides a user the TechView installation software and CH530 main processor software that must be loaded onto your PC in order to service a CH530 main processor. The TechView service tool is used to load software into the Tracer CH530 main processor.

Minimum PC requirements to install and operate TechView are:

- Pentium II or higher processor
- 128Mb RAM
- 1024 x 768 resolution of display
- CD-ROM
- 56K modem
- 9-pin RS-232 serial connection
- Operating system - Windows 2000
- Microsoft Office (MS Word, MS Access, MS Excel)
- Parallel Port (25-pin) or USB Port

Note: *TechView was designed for the proceeding listed laptop configuration. Any variation will have unknown results. Therefore, support for TechView is limited to only those operating systems that meet the specific configuration listed here. Only computers with a Pentium II class processor or better are supported; Intel Celeron, AMD, or Cyrix processors are not supported.*

TechView is also used to perform any CH530 service or maintenance function.

Servicing a CH530 main processor includes:

- Updating main processor software
- Monitoring chiller operation
- Viewing and resetting chiller diagnostics
- Low Level Intelligent Device (LLID) replacement and binding
- Main processor replacement and configuration modifications
- Setpoint modifications
- Service overrides

TechView Interface

Software Download

Instructions for First Time TechView Users

This information can also be found at http://www.trane.com/commercial/software/tracerch530/.

1. Create a folder called "CH530" on your C:\ drive. You will select and use this folder in subsequent steps so that downloaded files are easy to locate.
2. Download the Java Runtime installation utility file onto your PC in the CH530 folder (please note that this does not install Java Runtime, it only downloads the installation utility).
   - Click on the latest version of Java Runtime shown in the TechView Download table.
   - Select "Save this program to disk" while downloading the files (do not select "Run this program from its current location").
3. Download the TechView installation utility file onto your PC in the CH530 folder (please note that this does not install TechView, it only downloads the installation utility).
   - Click on the latest version of TechView shown in the TechView Download table.
   - Select "Save this program to disk" while downloading the files (do not select "Run this program from its current location").
4. Remember where you downloaded the files (the "CH530" folder). You will need to locate them to finish the installation process.
5. Proceed to "Main Processor Software Download" page and read the instructions to download the latest version of main processor installation files.

Note: you will first select the chiller type to obtain the available file versions.

TechView Interface

6. Select the product family. A table with the download link will appear for that product family.
7. Download the main processor software onto your PC in the CH530 folder (please note that this does not install the main processor, it only downloads the installation utility).
   - To do this, click on the latest version of the main processor.
   - Select "Save this program to disk" while downloading the files (do not select "Run this program from its current location").
8. Remember where you downloaded the files (the "CH530" folder). You will need to locate them to finish the installation process.
9. To complete the installation process, locate the installation utilities you downloaded into the CH530 folder. If necessary, use your PC's file manager to locate the downloaded files.
10. Install the applications in the following order by double-clicking on the install program and following the installation prompts:
    - Java Runtime Environment (JRE_VXXX.exe)

Note: During the Java Runtime Environment installation, you may be prompted to "select the default Java Runtime for the system browsers...". Do not select any system browsers at this step. There should be no default browsers selected for proper operation.

- TechView (6200-0347-VXXX.exe)
- The main processor (6200-XXXX-XX-XX.exe).

- The main processor program will self extract to the proper folder within the TechView program directory, provided the TechView program is properly installed on the C:\ drive.

11. Connect your PC to the CH530 main processor using a standard 9-pin male/9-pin female RS-232 cable.
12. Run the TechView software by selecting the TechView icon placed on your desktop during the installation process. The "Help...About" menu can be viewed to confirm proper installation of latest versions.

Diagnostics

The following diagnostic table contains all the diagnostics possible. Not all data is available unless tech view is connected.

Code: Three digit hexadecimal code used on all past products to uniquely identify diagnostics.

Diagnostic Name: Name of Diagnostic and its source. Note that this is the exact text used in the User Interface and/or Service Tool displays.

Severity: Defines the severity of the above effect. Immediate means immediate shutdown of the effected portion, Normal means normal or friendly shutdown of the effected portion, Special Mode means a special mode of operation (limp along) is invoked, but without shutdown, and Info means an Informational Note or Warning is generated.

Persistence: Defines whether or not the diagnostic and its effects are to be manually reset (Latched), or can be either manually or automatically reset (Nonlatched).

Criteria: Quantitatively defines the criteria used in generating the diagnostic and, if nonlatching, the criteria for auto reset. If more explanation is necessary a hot link to the Functional Specification is used.

Reset Level: Defines the lowest level of manual diagnostic reset command which can clear the diagnostic. The manual diagnostic reset levels in order of priority are: Local and Remote. A diagnostic that has a reset level of Local, can only be reset by a local diagnostic reset command, but not by the lower priority remote Reset command whereas a diagnostic listed as Remote reset can be reset by either.

Diagnostics

Table 5 - Main Processor Diagnostics

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
MP: Reset Has Occurred	Chiller	Warning	NonLatch	All	The main processor has successfully come out of a reset and built its application. A reset may have been due to a power up, installing new software or configuration. This diagnostic is immediately and automatically cleared and thus can only be seen in the historic diagnostic list.	NA
Low Pressure Cutout	Circuit	Immediate	Latch	Starting and Running [Stop, See criteria]	The suction refrigerant pressure (gauge) fell below the given threshold for the refrigerant installed: • 0.7 bar for R22 and R407c • 0.3 bar for R134a • 1.0 bar for R410a	Local
High Motor Temp/Overload	Cprsr	Immediate	Latch	All	• The High Motor Temperature or the Compressor Overload switch remained open for more than 35 minutes. • Five compressor fault diagnostics have occurred within the last 210 minutes.	Local
Compressor Fault	Cprsr	Immediate	NonLatch	All	The High Motor Temperature or the Compressor Overload switch input is open.	Local
BAS Failed to Establish Communication	Chiller	Special	NonLatch	At power-up	The BAS was setup as "installed" and the BAS did not communicate with the MP within 15 minutes after power-up.	Remote
BAS Communication Lost	Chiller	Special	NonLatch	All	The BAS was setup as "installed" at the MP and the Comm 3 LLID lost communications with the BAS for 15 continuous minutes after it had been established. The chiller follows the value of the Tracer Default Run Command which can be previously written by Tracer and stored nonvolatilely by the MP (either use local or shutdown).	Remote
External Chilled/Hot Water Setpoint	Chiller	Warning	NonLatch	All	a. Function Not "Enabled": no diagnostics. b. "Enabled ": Out-Of-Range Low or Hi or bad LLID, set diagnostic, default CWS/HWS to next level of priority (e.g. Front Panel SetPoint). This Warning diagnostic will automatically reset if the input returns to the normal range.	Remote
External Demand Limit Setpoint	Chiller	Warning	NonLatch	All	a. Function Not "Enabled": no diagnostics. b. "Enabled ": Out-Of-Range Low or Hi or bad LLID, set diagnostic, default DLS to next level of priority (e.g. Front Panel SetPoint). This Warning diagnostic will automatically reset if the input returns to the normal range.	Remote
Circuit Pumpdown Terminated	Circuit	Warning	Latch	Operational/ Service Pumpdown [All Except Operational and Service Pumpdown]	Going below the low pressure setting + 0.2 bar shall terminate Service Pumpdown. This indicates that the suction pressure of circuit 1 or 2 did not go below the low pressure setting + 0.2 bar within 1 minute from the start of Service Pumpdown.	Remote
Chilled Water Flow (Entering Water Temp)	Chiller	Immediate	Latch	Any Ckt(s) Energized [No Ckt(s) Energized]	The entering evaporator water temperature fell below the leaving evaporator water temperature by more than 1.7°C for 37°C sec while at least 1 compressor was running.	Remote

Diagnostics

Evaporator Entering Water Temp Sensor	Chiller	Normal	Latch	All	Bad Sensor or LLID	Remote
Evaporator Leaving Water Temp Sensor	Chiller	Normal	Latch	All	Bad Sensor or LLID	Remote
Condenser Entering Water Temp Sensor	Chiller	Warning	Latch	All	Bad Sensor or LLID	Remote
Condenser Leaving Water Temp Sensor	Chiller	Warning	Latch	All	Bad Sensor or LLID	Remote
Discharge Pressure Transducer	Circuit	Normal	Latch	All	Bad Sensor or LLID	Remote
Suction Pressure Transducer	Circuit	Immediate	Latch	All	Bad Sensor or LLID	Remote
Suction Temperature Sensor	Circuit	Normal	Latch	All	Bad Sensor or LLID	Remote
Evaporator Protection Water Temp Sensor	Circuit	Normal	Latch	All	Bad Sensor or LLID	Remote
Low Evap Leaving Water Temp: Unit Off	Chiller or Circuit	Warning and Special Action	NonLatch	Unit in Stop Mode, or in Auto Mode and No Ckt(s) Energized [Any Ckt Energized]	a) The leaving chilled water temperature fell below the leaving water temp cutout setting for 16.6°C- seconds while the Chiller is in the Stop mode, or in Auto mode with no compressors running. Energize Evap Water pump Relay until diagnostic auto resets, then return to normal evap pump control. Automatic reset occurs when the temp rises 1.1°C above the cutout setting for 30 minutes. When this diagnostic is active AND Leaving Water Temperature sensor diagnostic (loss of comm or out of range) the Evap Water pump relay shall be de-energized. b) If evaporator protection temperature sensors are installed, the effect is on the appropriate circuit. Else, the effect is on the chiller.	Remote
Low Evap Leaving Water Temp: Unit On	Chiller or Circuit	Immediate and Special Action	NonLatch	Any Ckt[s] Energized [No Ckt(s) Energizd]	a) The chilled water temperature fell below the cutout setpoint for 16.6°C-seconds while a compressor was running. Automatic reset occurs when the temperature rises 1.1°C above the cutout setting for 2 minutes. This diagnostic shall not de-energize the Evaporator Water Pump Output. If this diagnostic is active the Low Evap Leaving Water Temp: Unit Off diagnostic shall be suppressed. b) If evaporator protection temperature sensors are installed, the effect is on the appropriate circuit. Else, the effect is on the chiller.	Remote
Low Refrigerant Temperature	Circuit	Immediate	Latch	All except [Service Pumpdown]	The Evaporator Saturated Refrigerant Temperature dropped below the Low Refrigerant Temperature Cutout Setpoint for 16.6°C-seconds.	Local

Diagnostics

High Evaporator Water Temperature	Chiller	Immediate	NonLatch	All	The evaporator leaving water temperature is above 46°C. This diagnostic shall clear once the evaporator leaving water temperature falls below 43.3°C. This diagnostic protects the rupture disk. The evaporator water pump shall not run when this diagnostic is active.	Local
High Pressure Cutout	Circuit	Immediate	Latch	All	The high pressure cutout switch was open for more than one second.	Local
Emergency Stop	Chiller	Immediate	Latch	All	Emergency Stop input is open.	Local
Outdoor Air Temp Sensor	Chiller	Warning and Special Action	Latch	All	Bad Sensor or LLID. If configured as an air-cooled this diagnostic shall use a minimum low refrigerant temperature ignore time of 30 seconds.	Remote
MP: Non-Volatile Memory Reformatted	None	Warning	Latch	All	MP has determined there was an error in a sector of the Non-Volatile memory and it was reformatted. Check settings.	Remote
Check Clock	Platform	Warning	Latch	All	The real time clock had detected loss of its oscillator at some time in the past. Check / replace battery? This diagnostic can be effectively cleared only by writing a new value to the chillers time clock using the TechView or DynaViews set chiller time functions.	Remote
MP: Could not Store Starts and Hours	Platform	Warning	Latch	All	MP has determined there was an error with the previous power down store. Starts and Hours may have been lost for the last 24 hours.	Remote
MP: Non-Volatile Block Test Error	Platform	Warning	Latch	All	MP has determined there was an error with a block in the Non-Volatile memory. Check settings.	
Starts/Hours Modified	Cprsr	Warning	NonLatch	All	A counter for compressor starts or hours has been modified by TechView. This diagnostic is immediately and automatically cleared and thus can only be seen in the historic diagnostic list.	NA

Diagnostics

Evaporator Water Flow Lost Pump 1 (or Pump 2)	Chiller	Warning and Special Action	NonLatch	Evap pump commanded on	After flow had been proven the chilled water flow input was open for more than 4 continuous seconds. The evaporator pump control will switch control to the redundant pump. If redundant pump is not available, diagnostic will clear when flow is established.	Remote
Evaporator Water Flow Overdue Pump 1 (or Pump 2)	Chiller	Warning and Special Action	NonLatch	Estab. Evap. Water Flow on going from STOP to AUTO.	Evaporator water flow was not proven within a user adjustable time of the evaporator water pump relay being energized. Diagnostic is reset with return of evaporator water flow.	Remote
Fault Detected: Evaporator Water Pump 1 (or Pump 2)	Chiller	Warning and Special Action	NonLatch	All	Detection of a pump fault will cause pump control to switch to the redundant pump.	Remote
Condenser Water Flow Lost Pump 1 (or Pump 2)	Chiller	Warning and Special Action	NonLatch	Start and All Run Modes	After flow had been proven the condenser water flow input was open for more than 4 continuous seconds. This diagnostic is automatically cleared once all circuits are de-energized.	Remote
Condenser Water Flow Overdue Pump 1 (or Pump 2)	Chiller	Warning and Special Action	NonLatch	Estab Cond Water Flow	Condenser water flow was not proven within a user adjustable time of the condenser water pump relay being energized.	Remote
Fault Detected: Condenser Water Pump 1 (or Pump 2)	Chiller	Warning and Special Action	NonLatch	All	Detection of a pump fault will cause pump control to switch to the redundant pump.	Remote
Fan Fault	Circuit	Warning	NonLatch	All	The fan fault input was open for more than 5 seconds.	Local
High Condensing Pressure Pump Add	Chiller	Warning	Latch	Running	When running in parallel pump control, with one pump on, a high condensing pressure will force add the second pump. It will latch on to prevent pump cycling.	Remote

Diagnostics

Table 6 - Communication Diagnostics

Notes:
1. The following communication loss diagnostics will not occur unless that input or output is required to be present by the particular configuration and installed options for the chiller.
2. Communication diagnostics (with the exception of "Excessive Loss of Comm" are named by the Functional Name of the input or output that is no longer being heard from by the Main Processor.

Many LLIDs, such as the Quad Relay LLID, have more than one functional output associated with it. A comm loss with such a multiple function board will generate multiple diagnostics. Refer to the Chiller's wiring diagrams to relate the occurrence of multiple communication diagnostics back to the physical llid boards that they have been assigned to (bound).

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Excessive Loss of Comm	Chiller	Immediate	Latch	All	Loss of comm with 20% or more of the llids configured for the system has been detected. This diagnostic will suppress the callout of all subsequent comm loss diagnostics. Check power supply(s) and power disconnects - troubleshoot LLIDS buss using TechView	Remote
Comm Loss: External Auto/Stop	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Emergency Stop	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Ext Ice Building Ctrl Input	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Chiller shall revert to normal (non-ice building) mode regardless of last state.	Remote
Comm Loss: Outdoor Air Temperature	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. If configured as an air-cooled this diagnostic shall turn on all fans and use a minimum LPC ignore time of 30 seconds.	Remote
Comm Loss: Evap Leaving Water Temp	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Evap Entering Water Temp	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Condenser Leaving Water Temp	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Condenser Entering Water Temp	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Discharge Pressure Transducer	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote

Diagnostics

Comm Loss: Suction Pressure Transducer	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Ext Chilled/Hot Wtr Setpoint	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Chiller shall discontinue use of the External Chilled/Hot Water Setpoint source and revert to the next higher priority for setpoint arbitration	Remote
Comm Loss: External Demand Limit Setpoint	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Chiller shall discontinue use of the External Demand Limit Setpoint source and revert to the next higher priority for setpoint arbitration	Remote
Comm Loss: Auxiliary Setpoint Command	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Chiller shall discontinue use of the Auxiliary Setpoint and revert to the Chilled Water Setpoint based on setpoint arbitration	Remote
Comm Loss: High Pressure Cutout Switch	Chiller	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Evaporator Water Flow Switch	Chiller	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Condenser Water Flow Switch	Chiller	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Local BAS Interface	Chiller	Warning and Special Action	NonLatch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Use the last values sent from BAS	Remote
Comm Loss: Solenoid Valve	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Motor Temp/Overload	Cprsr	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Compressor Run Command	Cprsr	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Protection Module Cprsr	Circuit	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote

Diagnostics

Comm Loss: Condenser Fan Control Relays	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Fan Fault	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Op Status Programmable Relays	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Anti-Freeze Heater Relay	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Evap Protection Water Temp	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Evaporator Water Pump 1 (or Pump 2) Relay	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. For multi-pump systems, control switches to redundant pump. Failure of both pump systems results in a normal shutdown.	Remote
Comm Loss: Condenser Water Pump 1 (or Pump 2) Relay	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. For multi-pump systems, control switches to redundant pump. Failure of both pump systems results in a normal shutdown.	Remote
Comm Loss: Evaporator Pump 1 (or Pump 2) Fault Input	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. For multi-pump systems, control switches to redundant pump. Failure of both pump systems results in a normal shutdown.	Remote
Comm Loss: Condenser Pump 1 (or Pump 2) Fault Input	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. For multi-pump systems, control switches to redundant pump. Failure of both pump systems results in a normal shutdown.	Remote

Diagnostics

Comm Loss: Suction Temperature	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Compressor Staging Relay	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Heat/Cool Switch	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Condenser Speed Signal	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Electronic Expansion Valve	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote

Table 7 - Main Processor - Boot Messages and Diagnostics

DynaView Display Message	Description Troubleshooting
Boot Software Part Numbers: LS Flash --> 6200-0318-XX MS Flash --> 6200-0319-XX	The "boot code" is the portion of the code that is resident in all MPs regardless of what application code (if any) is loaded. Its main function is to run power up tests and provide a means for downloading application code via the MP's serial connection. The Part numbers for the code are displayed in the lower left-hand corner of the DynaView during the early portion of the power up sequence and during special programming and converter modes. See below.
Err2: RAM Pattern 1 Failure	There were RAM errors detected in RAM Test Pattern #1. Recycle power, if the error persists, replace MP.
Err2: RAM Pattern 2 Failure	There were RAM errors detected in RAM Test Pattern #2. Recycle power, if the error persists, replace MP.
Err2: RAM Addr Test #1 Failure	There were RAM errors detected in RAM Address Test #1. Recycle power, if error persists, replace MP.
Err2: RAM Addr Test #2 Failure	There were RAM errors detected in RAM Address Test #2. Recycle power, if the error persists, replace MP.
No Application Present Please Load Application...	No Main Processor Application is present - There are no RAM Test Errors. Connect a TechView Service Tool to the MP's serial port, provide chiller model number (configuration information) and download the configuration if prompted by TechView. Then proceed to download the most recent application or specific version as recommended by Technical Service.
MP: Invalid Configuration	MP has an invalid configuration based on the current software installed
MP Application Memory CRC Error	App software inside the MP failed its own checksum test. Possible causes: application software in the MP is not complete - software download to the MP was not completed successfully - or MP hardware problem. Note: User should attempt to reprogram the MP if this diagnostic occurs.
App Present. Running Selftest.Selftest Passed	An application has been detected in the Main Processor's nonvolatile memory and the boot code is proceeding to run a check on its entirety. 8 seconds later, the boot code had completed and passed the (CRC) test. Temporary display of this screen is part of the normal power up sequence.
App Present. Running SelftestErr3: CRC Failure	An application has been detected in Main Processor's nonvolatile memory and the boot code is proceeding to run a check on its entirety. A few seconds later, the boot code had completed but failed the (CRC) test. Connect a TechView Service Tool to the MP's serial port, provide chiller model number (configuration information) and download the configuration if prompted by TechView. Then proceed to download the most recent application or specific version as recommended by Technical Service. Note that this error display may also occur during the programming process, if the MP never had a valid application any time prior to the download. If the problem persists, replace the MP.

Diagnostics

A Valid Configuration is Present	A valid configuration is present in the MP's nonvolatile memory. The configuration is a set of variables and settings that define the physical makeup of this particular chiller. These include: number/airflow and type of fans, number/and size of compressors, special features, characteristics, and control options. Temporary display of this screen is part of the normal power up sequence.
Err4: UnHandled InterruptRestart Timer: [3 sec countdown timer]	An unhandled interrupt has occurred while running the application code. This event will normally cause a safe shutdown of the entire chiller. Once the countdown timer reaches 0, the processor will reset, clear diagnostics, and attempt to restart the application and allow a normal restart of chiller as appropriate. This condition might occur due to a severe electro-magnetic transient such as a near lightening strike. Such events should be rare or isolated and if no damage results to the CH530 control system, the Chiller will experience a shutdown and restart. If this occurs more persistently it may be due to an MP hardware problem. Try replacing the MP. If replacement of the MP proves ineffective, the problem may be a result of extremely high radiated or conducted EMI. Contact Technical Service.If this screen occurs immediately after a software download, attempt to reload both the configuration and the application. Failing this, contact Technical Service.
Err5: Operating System ErrorRestart Timer: [3 sec countdown timer]	An Operating System error has occurred while running the application code. This event will normally cause a safe shutdown of the entire chiller. Once the countdown timer reaches 0, the processor will reset, clear diagnostics, and attempt to restart the application and allow a normal restart of chiller as appropriate.See Err 4.
Err6: Watch Dog Timer ErrorRestart Timer: [3 sec countdown timer]	A Watch Dog Timer Error has occurred while running the application code. This event will normally cause a safe shutdown of the entire chiller. Once the countdown timer reaches 0, the processor will reset, clear diagnostics, and attempt to restart the application allowing a normal restart of chiller as appropriate.
Err7: Unknown ErrorRestart Timer: [3 sec countdown timer]	An unknown Error has occurred while running the application code. This event will normally cause a safe shutdown of the entire chiller. Once the countdown timer reaches 0, the processor will reset, clear diagnostics, and attempt to restart the application allowing a normal restart of chiller as appropriate
Err8: Held in Boot by User Key Press [3 sec countdown timer]	A touch was detected during boot indicating the user wanted to stay in boot mode. This mode can be used to recover from a fatal software error in the application code. Cycle power on the MP to clear this error if it was unintentional.
Converter Mode	A command was received from the Service Tool (Tech View) to stop the running application and run in the "converter mode". In this mode the MP acts as a simple gateway and allows the TechView service computer to talk to all the LLIDS on the IPC3 bus.
Programming Mode	A command was received by the MP from the Tech View Service Tool and the MP is in the process of first erasing and then writing the program code to its internal Flash (nonvolatile) Memory. Note that if the MP never had a prior application already in memory, the error code "Err3"will be displayed instead of this, during the programming download process.

Design Note: In general, all failures/comm loss due to CH530 components should have a latching diagnostic and effect. All customer inputs failures (out of range, etc) are generally nonlatching.

Diagnostics

Programmable Relays (Alarms and Status)

CH530 provides a flexible alarm or chiller status indication to a remote location through a hard wired interface to a dry contact closure.

Four relays are available for this function, and they are provided (generally with a Quad Relay Output LLID) as part of the Alarm Relay Output Option.

The events/states that can be assigned to the programmable relays are listed in the following table and through a TechView configuration.

Table 8 - Chiller events/status descriptions

Event/state	Description
Alarm - Latching	This output is true whenever there is any active diagnostic that requires a manual reset to clear, that affects the chiller, the circuit, or any of the compressors on a circuit. This classification does not include informational diagnostics.
Alarm - Auto reset	This output is true whenever there is any active diagnostic that could automatically clear that affects the chiller, the circuit or any of the compressors on a circuit. This classification does not include informational diagnostics. If all of the auto resetting diagnostics were to clear, this output would return to a false condition.
Alarm	This output is true whenever there is any diagnostic affecting any component, whether latching or automatically clearing. This classification does not include informational diagnostics.
Warning	This output is true whenever there is any informational diagnostic affecting any component, whether latching or automatically clearing.
Chiller Limit Mode	This output is true whenever the chiller has been running in one of the Unloading types of limit modes (Condenser, Evaporator, Current Limit or Phase Imbalance Limit) continuously for the last 20 minutes. A given limit or overlapping of different limits must be in effect continuously for 20 minutes prior to the output becoming true. It will become false, if no Unload limits are present for 1 minute. The filter prevents short duration or transient repetitive limits from indicating. The chiller is considered to be in a limit mode for the purposes of front panel display and annunciation, on if it is fully inhibiting loading by virtue of being in either the "hold" or "forced unload" regions of the limit control, excluding the "limited loading region". In previous designs, the "limit load" region of the limit control was included in the criteria for the limit mode call out on the front panel and annunciation outputs.
Compressor Running	The output is true whenever any compressors are started or running on the chiller and false when no compressors are either starting or running on the chiller. This status may or may not reflect the true status of the compressor in Service Pumpdown if such a mode exists for a particular chiller.
Maximum Capacity	The output is true whenever the chiller has reached maximum capacity continuously for the Max Capacity Relay debounce time. The output is false when the chiller does not have all its available compressors running continuously for the debounce time.

Table 9 - Default settings

Default setting	Event/Status
Output relay 1	Compressor running
Output relay 2	Latching alarm
Output relay 3	Chiller limit mode
Output relay 4	Warnings

Notes

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Literature Order Number	CG-SVU02B-E4
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New	CG-SVU02A_0405
Literature Stocking Location	Europe

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